Work Ord September-11-1		8 <b>48</b>	3715	*106	3848*					Page 1
Item ID: Revision ID: Item Name:	646.3715 Strut Doubler	6 <sup>4</sup>	3715	Accept	*N900	<u>04010</u>	n* <sup>s</sup>	Setup Start Stop	ı VI -	S1* S2*
Start Date: Required Date: Reference:	9/23/13 : 9/23/13	Start Qty: 16.00 Req'd Qty: 16.00	*16 <sup>;</sup> *16 <sup>;</sup>		Cust Item 1 Customer:	ID:				
Approvals:		i: MC5				ate:		Run Start Stop	IVI	R1* R2*
Sequence ID/ Work Center I	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool # Plan Code			Reject Number	Insp. Stamp
Draw Nbr	Revi	sion Nbr								
646.3700	A									!
*110 *110* Waterjet		Memo		0.00			16	o		Ae
FLOW CNC Water	jet	I-Cut as per Dwg Rev: Prog Rev:	Α							13,11
		2-Deburr if	-							:
*120 *120*		QC2- Inspect parts off m	achine FAI/FAIB	0.00			16			_Ae
QC  Quality Control		Memo		0.00						13.11

NCR: Yes / No	WORK ORDER NON-CONFORMANCE / UPDATE  QA Closed:									
Work Order:	DISPOSITION		AGAINST DEPART							
Part No.	Rework Scrap	Skid-tube Machining	Crosstube Small Fab	Prod.						

Work Order Update

Description of work order update

or Non-conformance

General

Bend

Burrs

BOM/Route

Contamination

Countersink

**Cut Too Short** 

Drill Holes

Drawing

Finish

Folio

Broken/Damaged

Qty

Step

Centre Not Concentric to O/S

Initial

**Chief Eng** 

**FAULT CATEGORY** 

Out of Calibration

Outside Dimensions

Out of Sequence

Use-as-is

<b>IFORN</b>	MANCE / UPDATE			₩.
		QA Closed:	Date:	
	AGAINST	DEPARTMENT	PROCESS	
f Therm	Skid-tube Crosstube Machining Small Fab noforming Finishing Large Fab Composite	Proc Rec/Stor	Water Jet d. Eng. Coor. e/Packaging Supplier	Engineering Quality Other
nitial	Action	Sign &		
ief Eng	Description	Date	Verification	QC Inspector
•				
T CATE	GORY			
	ion Incomplete ions Incomplete/Unclear enance eled	Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned W Power Loss/S	st ssing	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
Juser				

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

NCR No.

**Landing Gear** 

Bending

Cracks

Cuffs

Heat Treat

Crushed/Crimped

Inspection Strip in Tube

Torque Waves in Extrusion

Date

Root

Cause

Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved

Work Order	r ID	106848
September-11-13	11:47.	:08 AM

Work Order ID 106848 September-11-13 11:47:08 AM			Page 2					
Item ID: Revision ID: Item Name:	646.3715 Strut Doubler			Accept *	N9000401	INN*	Setup Star	ועיעו
Start Date:	9/23/13	<b>Start Qty:</b> 16.00	*16*		Cust Item ID:			
Required Date	: 9/23/13	<b>Req'd Qty:</b> 16.00	*16*		Customer:			
Reference:						1	Run Star	t 481544 :
Approvals:	Process Pla	ın:	Date:	Tooling:	Date:	·	Stop	"NRT"
	QC:		Date:	SPC (Y/N):	Date:		Siot	*NR2*
Sequence ID/ Work Center I	ID	Operation Description QC8- Inspect parts - seco	nd check	Set Up/ Run HoursDAS 0.00 27		Plan Accept Code Qty	Reject Qty	Reject Insp. Number Stamp
*130* QC: Quality Control		Мето		0.00 BU.OY		<i>\\</i>		
140 *1 <b>4</b> 0*		Outsource process-Anodi	ze per QSI017 4.1.10.1	0.00		C	¥ 1 > 1	11/06 (16)
Outsource process	- Anodize	Memo Issue P/O to	atg : <u>2 1915</u>	0.00			<u> </u>	
		1- Black And	odize as per Dwg 646.3700					
		2- PRIME A	S PER DWG, SEE NOTE	¥2				
		Certification	of Comformity is required					\$ *
150 *150*		Receive & Inspect for Da	nmage & Mat'l Certs	0.00			Palu	122 (16)
Packaging Packaging		Memo		0.00			-10/4/	16

Material   Setup   Other   Oth												DQA:	Date	::
Work Order:    Part No.	NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORN	/ANCE / UP	DATE			•
Part No.									<b>,</b>			QA Closed:	Date	:
Part No.	Work Orde	ar.					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part No.    Scrap   Use-as-is   Use-as-is		••••					Rework	]		Skid-tube	Crosstube	1	Water Jet	Engineering
Root Cause Date Step Oty Or Non-conformance Chief Eng Description Date Verification QC Inspector  Doc/Data Equip/Tooling Operator Operator Other	Part I	No.					Scrap	]		———	Small Fab	Pro	d. Eng. Coor.	
Root Cause Date Step Qty Description of work order update Equip/Tooling Qto Inspector Doc/Data Equip/Tooling Qto Inspector Doc/Data Equip/Tooling Qto Inspector Qto Qto Inspector Qto										· · ·	· · · · · ·	Rec/Sto	<del>-</del>	Other
Cause       Date       Step   Qty   Or Non-conformance       Chief Eng   Description       Date   Verification   QC Inspector         Doc/Data   Equip/Tooling   Coperator   Cop	NCR I	۷o.			<u> </u>		Work Order Update	]		Large Fab	Composite	]	Supplier	
Doc/Data	Root					Descri	ption of work order update		Initial	Ac	tion	Sign &		
Equip/Tooling Operator	Cause		Date	Step	Qty	(	or Non-conformance	Cr	nief Eng	Desc	ription	Date	Verification	QC Inspector
Operator Material Setup Other Frocess Supplier Training Unapproved Bending Centre Not Concentric to O/S Cortacks Broken/Damaged Broken/Damaged Crushed/Crimped Crushed/Crimped Cuffs Cuffs Cuffs Cuffs Cuntersink Cuffs Cuntersink Cuffs Cuntersink Cuffs Cuntersink Cuffs Cuntersink Cuntersi	Doc/Data	Ш												
Material   Setup   Other   Oth	Equip/Tooling													
Setup Other	Operator	Ш										]		}
Other Process Supplier Training Unapproved  Temperature/Forced Hardware Centre Not Concentric to O/S BOM/Route Hardware Hardware Unspection Incomplete Cracks Broken/Damaged Inspection Incomplete Inspection Incomplete Crushed/Crimped Crushed/Crimped Unapproved  Temperature/Cure Weld Hardware Part Incorrect Weld Unapproved Heat Treat Unapproved  Wislabeled Positioned Wrong	Material	Ш												1
Process Supplier Training Unapproved Training Unapproved Training Unapproved Training Unapproved Training Unapproved Training Unapproved Temperature/Forced Temperature/Cure	Setup	Ш		İ										İ
Supplier Training Unapproved    Supplier   Fault Category		H						1						
Training Unapproved		Ш												
Landing Gear   General		Ш												
Landing Gear   General   General   Ovalized   Pressure/Forced   Pressure/Forced   Over/Under tolerance   Temperature/Cure   Cracks   Broken/Damaged   Inspection Incomplete   Part Incorrect   Weld   Wrong Stock Pulled   Cuffs   Contamination   Maintenance   Maintenance   Part Moved   Part	_								1					
Landing Gear  Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Cuffs Countersink Countersink Countersink Centre Not Concentric to O/S Bend Grain Crack Crack Counter Not Concentric to O/S Bod/Route Hardware Cover/Under tolerance Cover/Under tolerance Temperature/Cure Temperature/Cure Delta Part Incorrect Weld Positioned Wrong Stock Pulled Countersink Mislabeled Part Moved Positioned Wrong	Unapproved			<u> </u>	<u> </u>			<u> </u>			***		<u> </u>	
Bending Bend Grain Ovalized Pressure/Forced Centre Not Concentric to O/S BOM/Route Hardware Over/Under tolerance Temperature/Cure Cracks Broken/Damaged Inspection Incomplete Part Incorrect Weld Crushed/Crimped Burrs Instructions Incomplete/Unclear Part Lost/Missing Wrong Stock Pulled Cuffs Contamination Maintenance Part Moved Heat Treat Countersink Mislabeled Positioned Wrong			_		<del></del>			AUI	LT CATE	SORY				<u> </u>
Centre Not Concentric to O/S BOM/Route Broken/Damaged Inspection Incomplete Crushed/Crimped Burrs Instructions Incomplete/Unclear Cuffs Contamination Heat Treat Countersink  Hardware Over/Under tolerance Part Incorrect Weld Wrong Stock Pulled Part Lost/Missing Part Moved Part Moved Positioned Wrong	Landi		1				<b>-</b>		<b>1</b> 6 .		_	7	_	٦
Cracks Broken/Damaged Inspection Incomplete Part Incorrect Weld Crushed/Crimped Burrs Instructions Incomplete/Unclear Part Lost/Missing Wrong Stock Pulled Cuffs Contamination Maintenance Part Moved Heat Treat Countersink Mislabeled Positioned Wrong			_			~ <del> </del>	4	-	4		_	-1	., <u> </u>	<del></del>
Crushed/Crimped Burrs Instructions Incomplete/Unclear Part Lost/Missing Wrong Stock Pulled Cuffs Contamination Maintenance Part Moved Heat Treat Countersink Mislabeled Positioned Wrong		$\vdash$	1	ot Concei	ntric to	<sup>5/5</sup>  -	<b>→</b>	-	4		-	<b>⊣</b> `	<b></b>	
Cuffs Contamination Maintenance Part Moved Heat Treat Countersink Mislabeled Positioned Wrong		$\vdash$	l	C		$\vdash$	1	<u> </u>	<b>-</b> 1		⊢	=	<b>⊢</b>	<b>⊣</b>
Heat Treat Countersink Mislabeled Positioned Wrong		$\vdash$	1	crimpea		<u> </u>	-	$\vdash$	4		Unclear	-₹	issing [	wrong Stock Pulled
		-	ł			$\vdash$	-	$\vdash$	4		<u> </u>	-1	<b>A</b> f = = = = = =	
		$\vdash$	1		Tubo	<u> </u>	╡	$\vdash$	1		<u> </u>	⊣	· ·	Journal
Inspection Strip in Tube Cut Too Short Misread Power Loss/Surge Other  Ripples in Bend Drill Holes Offset		$\vdash$	1		rube	-	╡	$\vdash$	4			Jeower ross/	Surge [	Jotner

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Ord September-11-1				*106	8848*							Page 3
Item ID: Revision ID:	646.3715			Accept	*N900	040	100	)*	Setup			S1*
Item Name: Start Date: Required Date Reference:	Strut Doubler 9/23/13: 9/23/13	<b>Start Qty:</b> 16.00 <b>Req'd Qty:</b> 16.00	*16* *16*		Cust Item I Customer:	D:				Stop	*N:	S2*
Approvals:		nn:	Date:	Tooling: SPC (Y/N):		ate:				Start Stop		R1* R2*
Sequence ID/ Work Center I 160 *160* QC: Quality Control	D	Operation Description QC5- Inspect part comple Memo	eteness to step on W/O	Set Up/ Run Hours 0.00 SM/ 0.00 13 12	Tool ID	Tool #	Plan Code	Accept Qty	Reje Qty		Reject Number	Insp. Stamp
*190 *190* Packaging Packaging		Memo	ock Location: \$150	0.00	HE P# AND			Mex.	L		_/3	-12-3
200 *200* oc		QC21- Final Inspection -	Work Order Release	0.00			(	A)	S.	) m 1	13/12/	63

Quality Control

13/12/03 MF 13-12-63

NCD. Voc	/ No				WORK ORDER NON-C	ONEODE	MANCE / LID	DATE	DQA:	Date:	, t
NCR: Yes	/ No				WORK ORDER NON-C	.OIALOVI	VIAINCE / UP	DATE	QA Closed:	Date:	
Work Order:					DISPOSITION			AGAINST DE	PARTMENT,	/PROCESS	
Part No.					Rework Scrap Use-as-is		Skid-tube Machining noforming	Crosstube Small Fab Finishing		Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other
NCR No.			<del></del>	· · · · · · · · · · · · · · · · · · ·	Work Order Update	Inen	Large Fab	Composite	Nec/3to	Supplier	Other
Root				Descri	ption of work order update	Initial	Ac	tion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chief Eng	Desc	cription	Date	Verification	QC Inspector
Doc/Data											
Equip/Tooling											
Operator	]							:			
Material											
Setup						ļ					
Other											
Process											
Supplier											
Training	]						]				
linapproved	7										

Landing	Gear	General		_		_		
	Bending	Bend		Grain		Ovalized		Pressure/Forced
	Centre Not Concentric to O/S	BOM/Route		Hardware		Over/Under tolerance		Temperature/Cure
	Cracks	Broken/Damaged		Inspection Incomplete		Part Incorrect	Г	Weld
	Crushed/Crimped	Burrs		Instructions Incomplete/Unclear		Part Lost/Missing	Γ	Wrong Stock Pulled
	Cuffs	Contamination	Γ	Maintenance	П	Part Moved		-
	Heat Treat	Countersink		Mislabeled	Г	Positioned Wrong		
	Inspection Strip in Tube	Cut Too Short		Misread		Power Loss/Surge		Other
	Ripples in Bend	Drill Holes	Γ	Offset		•		• · · · · · · · · · · · · · · · · · · ·
	Torque Waves in Extrusion	Drawing		Out of Calibration				
	Turning Sequence	Finish		Out of Sequence				
	Wave/Twist in Tube	Folio	Γ	Outside Dimensions				

**FAULT CATEGORY** 

September-11-13 11:47:08 AM

Page 1

Work Order ID:

106848

Parent Item:

646.3715

Parent Item Name:

Strut Doubler

**Start Date: 9/23/13** 

Required Date: 9/23/13

**Start Qty: 16.00** 

Required Qty: 16.00

Comments:

IPP REV:A 12.10.22 NEW ISSUE DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M6061T6S.040 6061-T6 .040 Sheet	· · · · · · · · · · · · · · · · · · ·	Purchased	No			110	sf	264.5670	0.0434	<del>*0.730947</del> 2	-	AL I	3.11.0
				<b>Location</b>		Loc Oty	<u>L</u> a	oc Code					i
				MAT021		264.567							- 3 .
				m126	350	264.567			12	16350	· —	> 1	73(

NCR: Y	es / No				WORK ORDER NON-O	COP	<b>NFORM</b>	ANCE / UP	DATE			-
	·							•		QA Closed:	Date:	
Work Orde	er:				DISPOSITION	-			AGAINST D	EPARTMENT	/PROCESS	
Part N	lo.				Rework Scrap Use-as-is		r	Skid-tube Machining noforming	Crosstube Small Fab Finishing	<b>—</b> i	Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other
NCR N	lo		<del></del>		Work Order Update	]		Large Fab	Composite		Supplier	Other
Root				Descri	ption of work order update	1	nitial	Ac	tion	Sign &		
Cause	Date	Step	Qty	(	or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling								i				
Operator		İ										
Material		1										•
Setup												
Other			1									
Process			1					_				
Supplier								·				
Training	_	İ										
Unapproved												
					F	AUL	T CATE	GORY				
Landir	ng Gear			_	General	_	-		_			-
	Bendin	g			Bend	L	Grain		L	Ovalized		Pressure/Forced
	Centre	Not Conce	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct	Weld
	Crushe	d/Crimped			Burrs	L	Instruct	ions Incomplete/	Unclear	Part Lost/M	ssing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte	nance		Part Moved		
	Heat Ti	eat			Countersink		Mislabe	led		Positioned V	Vrong	
	Inspect	ion Strip ir	1 Tube		Cut Too Short		Misread	1	ř	Power Loss/	Surge	Other
	Ripples	in Bend			Drill Holes		Offset				<del>"-</del>	
	Torque	Mayos in	Evtrucio	, I	Drawing		Out of	Calibration				

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

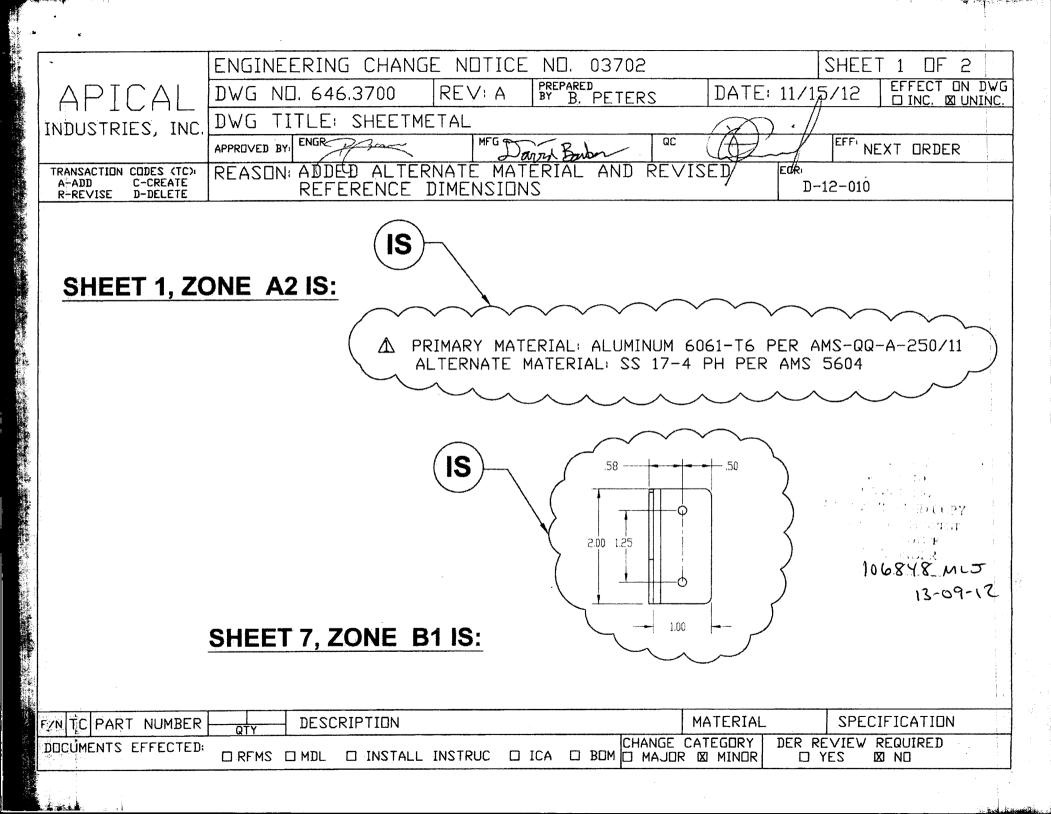
DART AEROSPACE LTD	Work Order:	106848
Description: Strut Doubler	Part Number:	646.3715
Inspection Dwg: 646.3700 Rev: A		Page 1 of 1

## FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
2.50	+/-0.005 4/	2.50	-			JKW-01
2.50	+/-0.005	250			V	
0.040	+/-0.005 .010.	. 037			V	
		-				
			DAS 27		Preliminary A	

		<b>-</b> , (C	<u> </u>	
Measured by:	Audited by:	27 9-80	Preliminary Approval:	L
Date: / 3 · // · 02	Date:	13/11/04	Date:	
		<del></del>		

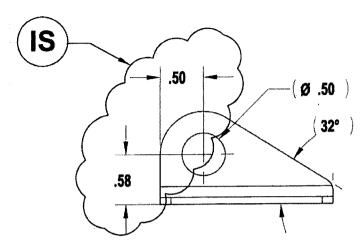
Rev	Date	Change	Revised by	Approved
Α	13.03.04	New Issue	KJ 🚓	/AL



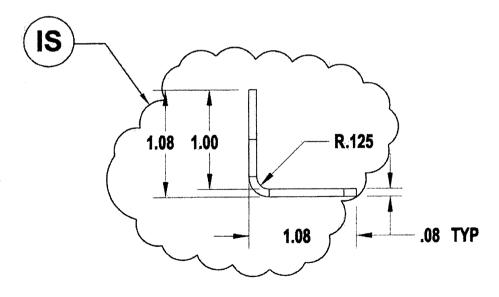
APICAL INDUSTRIES, INC.

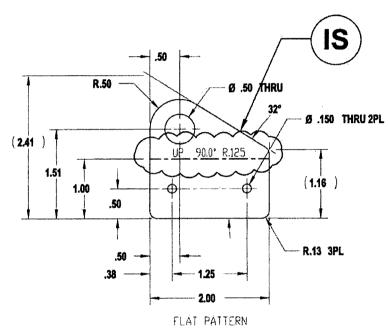
ENGINEERING CHANGE ORDER NO. 03702

SHEET 2 OF 2



## SHEET 7, ZONE C4 IS:





SHEET 7, ZONE B7 IS:

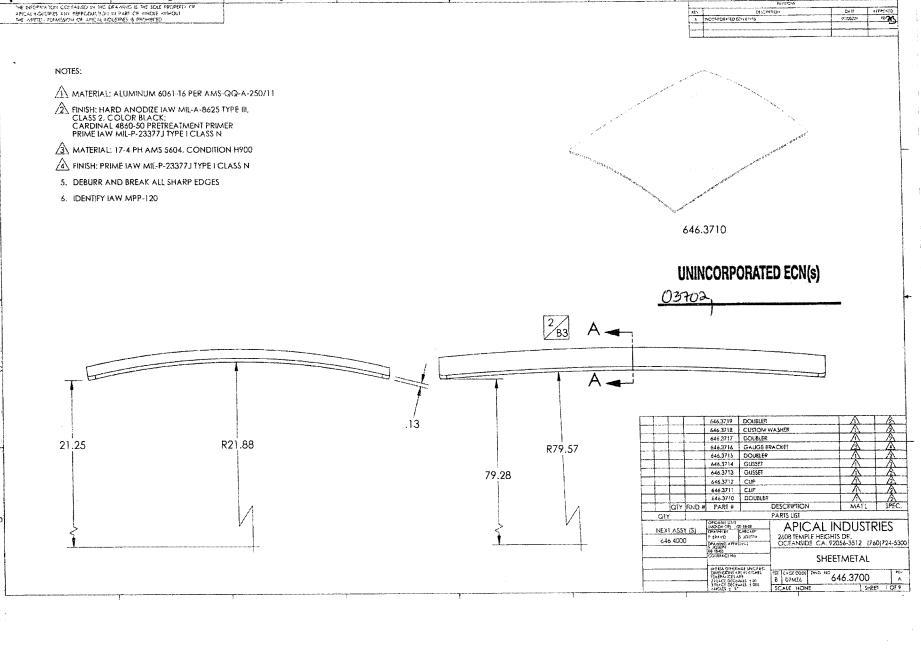
# SHEET 7, ZONE D1 IS:

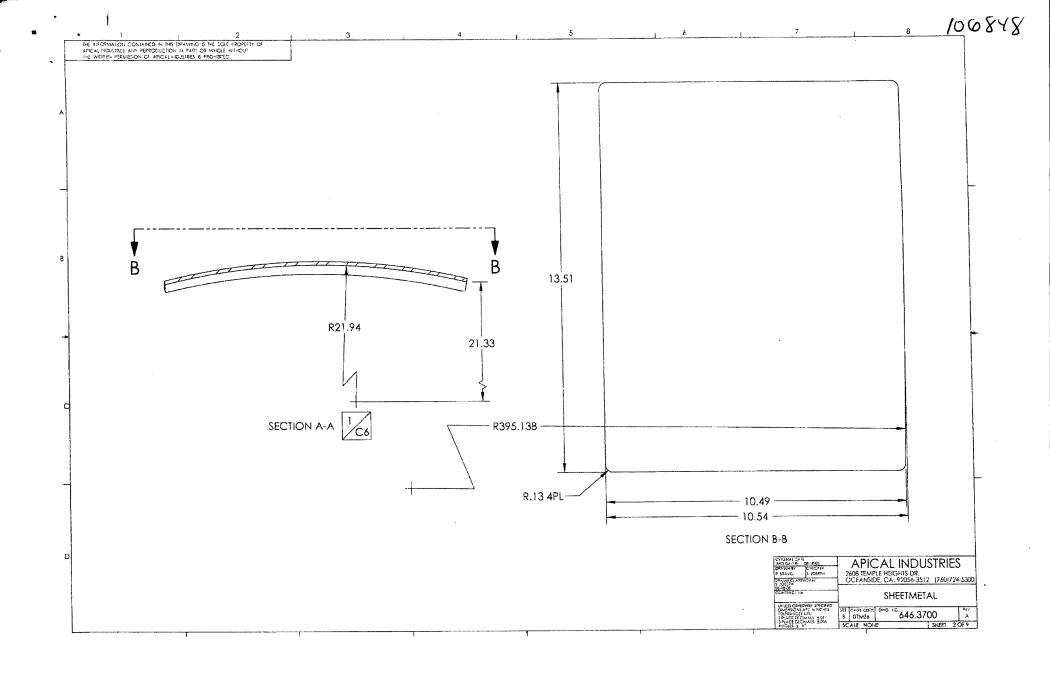
FIN TO PART NUMBER

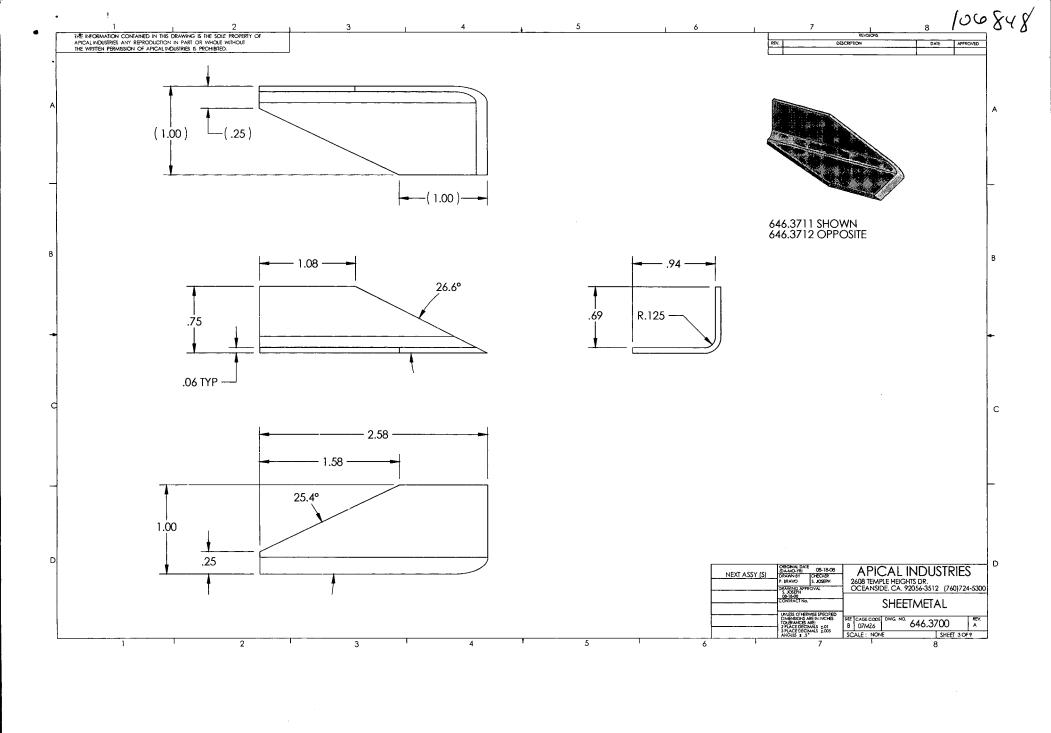
QTY

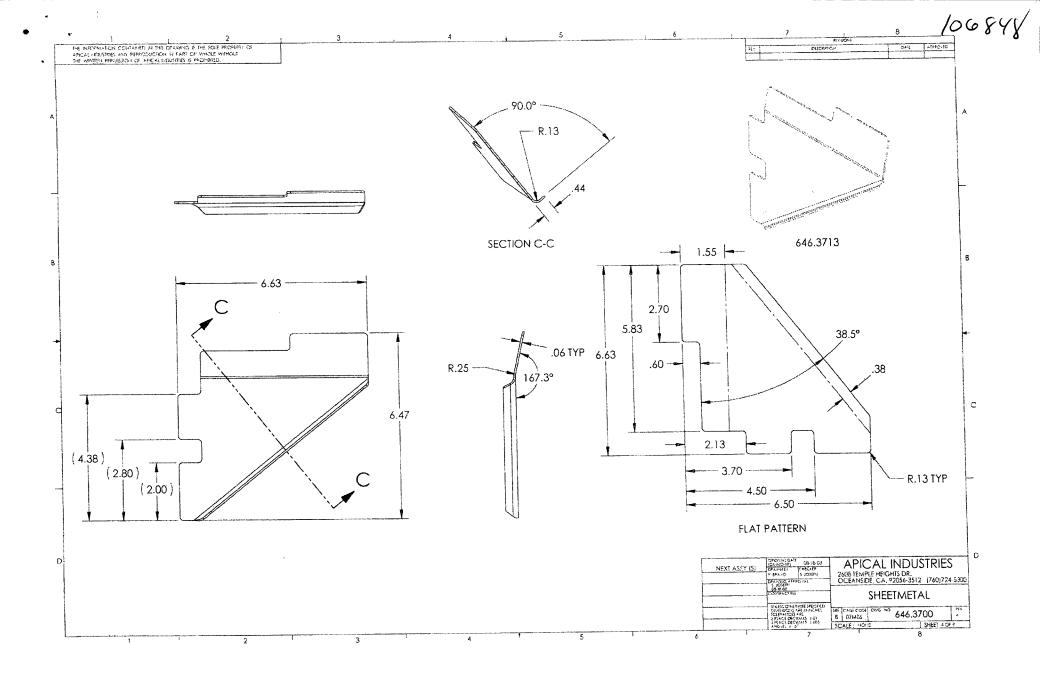
DESCRIPTION

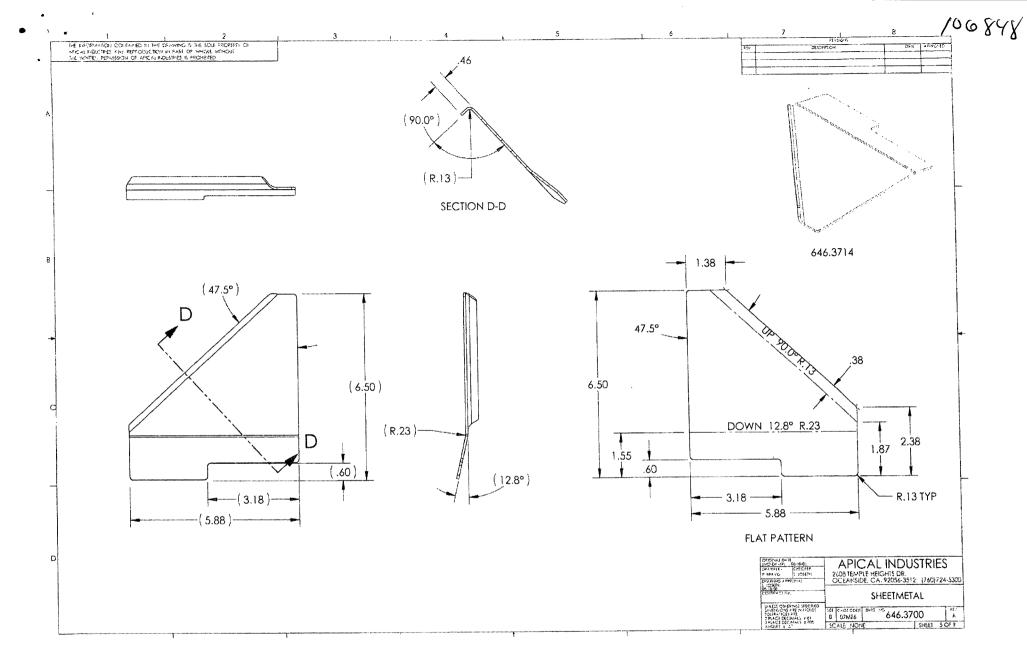
MATERIAL/SPECIFICATION

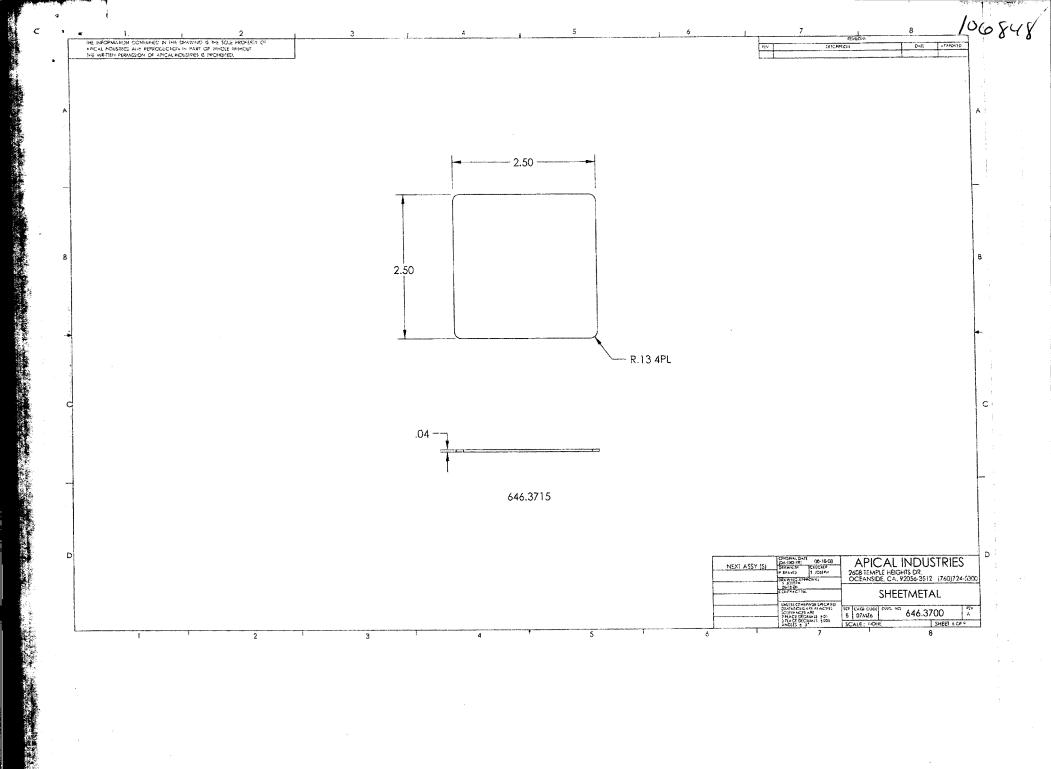


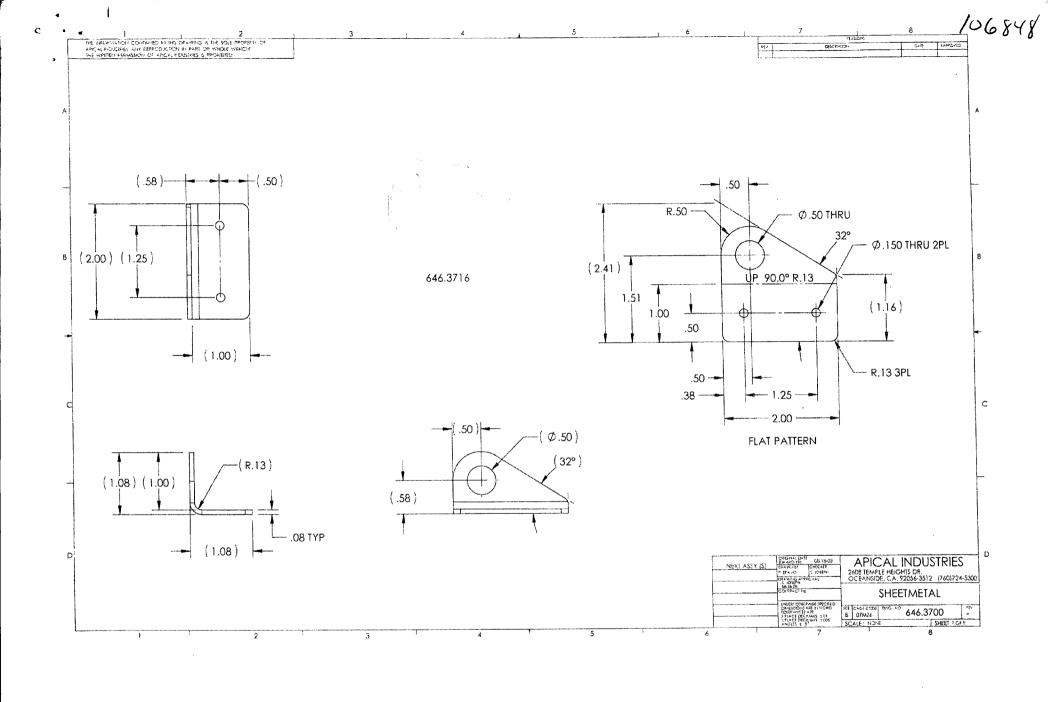


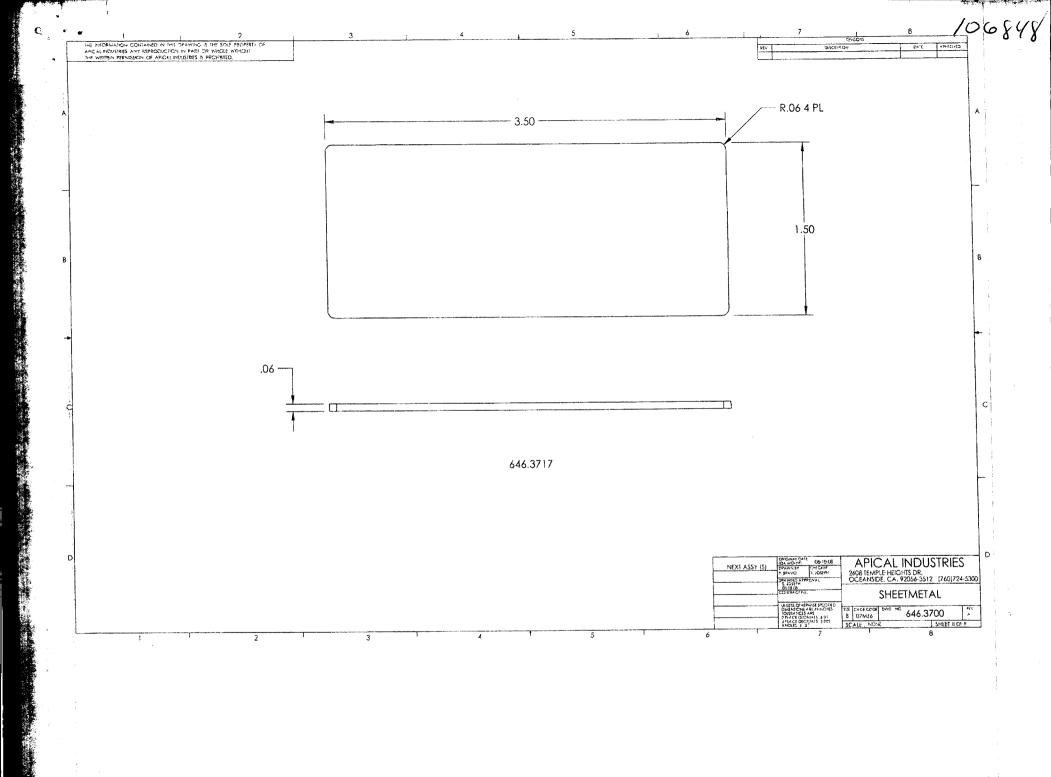




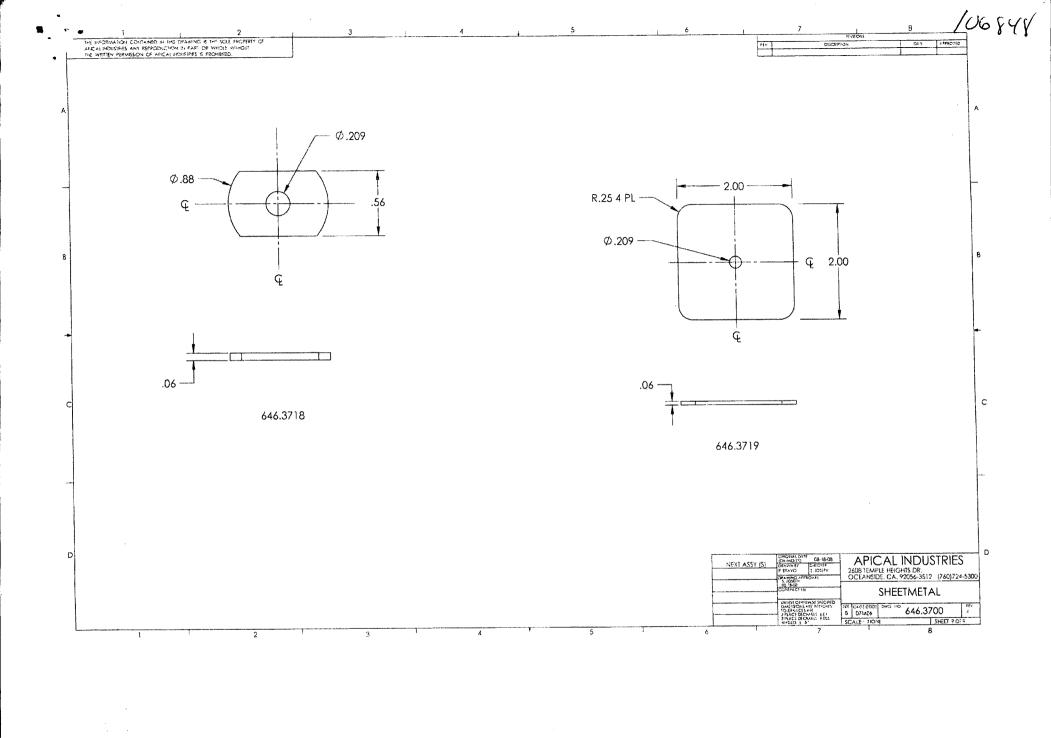








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A.T.G. Industries Inc. 731, rue Industrielle Rd. PLATING DEPARTMENT Rockland, On K4K 1T2 Canada

Ph: (613) 446-4544 Fax: (613) 446-4556

## Pack List

Number: 62753

Date: 22-Nov-13

То

DART AEROSPACE LTD 1270 ABERDEEN ST. HAWKESBURY, ON K6A 1K7 Canada Ship To

DART AEROSPACE LTD 1270 ABERDEEN ST. HAWKESBURY, ON K6A 1K7

Canada

Ph: 613-632-5200

Fax: 613-632-1185

Ph: 613-632-5200

Fax: 613-632-1185

Terms		Ship Via			
Quantity	Description				
1	Part: ASST		Rev:		
lot					
	10 PCS 646.3312 (12.05) 12 PCS 646.3010 (10.25)				
	6 PCS 646.3310 (18.10)				
	2 PCS 645.3110 (10.65) 4 PCS 646.3810 (6.55)				
	32 PCS 646.3715 (6.70)	<del>1818</del>			
/ -	38 PCS 646.3718 (3.95) / 6 PCS 646.9812 (22.80)				
	0 FC3 040.9612 (22.60)				
	HARD ANODIZE BLACK				
	MIL-A-8625 TYPE III CLASS 2				
	PRIME MIL-P-23377J TYPE I CLAS	S.N			
	PRICE IS PER PIECE				
	Job: 20130724	PO: 21915	Line:		
	Certificate of Conf	formance		•	
	A.T.G. Industries certifies that all items in	n this shipment are in	conformance		
	with all requirements, specifications and drawings referenced in the purchase order.  ISO 9001 : 2008 REGISTERED  ATG SALES-2010 TERMS APPLY				
·					
	CERTIFIED SIGNATURE:				
	OLIVII ILD GIGINATORE .				
	RECEIVER SIGNATURE :				
				·	
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i				•	